



CLINICAL MEDICINE

VOLUME 50

SEPTEMBER, 1943

NUMBER 9

GEORGE B. LAKE, Jr.
Publisher

RALPH L. GORRELL, M.D.
Acting Editor

EDITORIAL STAFF

Frank Thomas Woodbury, B.A., M.D.
Lee Douglas van Antwerp, A.B., M.D., F.A.C.P.
W. A. N. Dorland, A.M., M.D., F.A.C.S.
Harold Swanberg, B.Sc., M.D., F.A.C.P.
Gentz Perry, M.S., M.D., F.A.C.R.
H. J. Achard, M.D.

Editorial

Alphonse Laveran Soldier and Scientist

MUCH of our knowledge of epidemiology and sanitation is based upon the work of men in the medico-military services of various countries.

It was a French medical officer, Alphonse Laveran, who laid the foundation for the control of malaria, which, until his time, was one of the most fatal scourges of tropical countries.

Laveran was born in Paris in 1845, and was graduated from the University of Strassburg in 1867. Having a taste for the excitement and adventure of military life, he entered the medical service of the French army, and was so studiously intent upon his duties that, eight years after his graduation, he was qualified to write a treatise on military medicine, which was published in 1875, when he was only thirty years old.

In 1880 he was on duty with the army in Algeria, where he was appalled by the toll which malaria was taking among the soldiers, as well as in the civilian population. Having trained himself in microscopy, he set himself to find out the cause of the disease, and on November 6, of that year, discovered the plasmodia, though it took another year to work out the various types, so that the full description of their life cycles and varieties did not appear until 1881.

His important discoveries were re-

warded by his appointment as professor in the School of Military Sanitation, in Paris, where he was also elected president of the Society of Exotic Pathology, and made a member of the Institute and of the Academy of Medicine. His outstanding contributions to medical science were recognized by the awarding of the Nobel Prize, in 1907. He passed to his rest in 1922, at a ripe old age.

Without the labors of Laveran, those of Sir Ronald Ross, a British military surgeon in India, in discovering and proving the anopheles mosquito as the vector of malaria, would have been impossible or indefinitely delayed; and no one can say how long we would have had to wait for a Panama Canal, for much of the brilliant sanitary work of Gorgas rested upon Laveran's discoveries, as did also that of Golgi, Grassi, and others in the prevention of the spread of malaria.

♦

In judging people, estimate them by their own standard, not by yours.—MANLY P. HALL.

♦

What Is General Practice?

THE general practitioner should consider himself the first line of defense, his patient's defense against disease. If he fails, the result may be as serious to

his patient as the falling asleep of a sentry on guard duty.

The patient's only hope, when menaced with serious disease which does not give rise to unmistakable symptoms, is to find a physician who is alert enough to recognize the various possibilities. This alertness, and the knowledge broad enough to cover most of the superficial aspects of medicine and surgery, are the basis of general practice.

In reviewing any series of patients with missed diagnoses, the conclusion most often reached is that the causative disease was not thought of. Any disease may occur in your practice tomorrow. The physician who says, "I never see cases of tuberculosis," should say, "I am never on the lookout for tuberculosis."

It takes real character to be forever on the watch for serious illness, as the great majority of patients have transient ills. When an early diagnosis is made, however, the general practitioner has rendered his patient a great service. He has given him more of a chance for life and for happiness.

Time is the essence of diagnosis. A month wasted may make the difference between an operable and an inoperable carcinoma. If you are not sure of your diagnosis and on firm ground, seek consultation with someone who knows more in that field than you do. Your patient does not lose faith in you when you do your best for him; rather, he tends to lose confidence when he feels that he is not being offered all the advantages of modern specialists and modern knowledge.



Nothing can resist the will of man when he knows what is true and wills what is good.

—ELIJAH LEVI



The Body Does Not Cure Itself

WE ARE so accustomed to thinking that the body tends to restore itself to normal after injury or disease, that it comes as a shock to realize that it cannot adapt itself efficiently to a pathologic condition.

The body's reaction to any change, whether normal or abnormal, is the same. As William Welch wrote 45 years ago, the body has only the power to adapt a given function to a changed condition. This adjustment, as in the case

of developing muscles through exercise, is excellently suited to physiological changes, but often falls far short when a pathological change is threatened.

"How can one conceive of any purpose useful to the patient being served by filling the air cells of the lung with pus cells, fibrin and red corpuscles (pneumonia) or by bathing the brain and spinal cord with serum and pus (meningitis)? . . . The sole weapons of defense of the body may aggravate the pathologic process."

Jokl in *Clinical Proceedings* of the Cape Town Post-Graduate Medical Association (January 1943) revives this brilliant discourse. Welch's conclusion should be remembered: "There is ample scope for the beneficent work of the physician and surgeon, since pathologic adaptations are by no means always of therapeutic value."

Let all those who advise "masterly inactivity" and therapeutic nihilism be sure first that they are not being intellectually lazy. The body does not drain pus spontaneously until much pain and tissue destruction has been suffered; it does not cure a cancer; diabetes tends to aggravate itself and so on.

It is true that we cannot cause a fracture to unite, but we can be sure that the fragments are in the best position for function, and aid in gradually restoring that function.

The author's studies have shown that, contrary to our present day beliefs, physical training does not increase resistance to infection and disease. Good health can only be attained through a combination of proper feeding, good housing, medical care and social organization.

Perhaps we have been wrong in encouraging certain of nature's processes. Possibly cold should be applied to infections to prevent the appearance of inflammation. Why not think over all our treatments, to make sure that we are using common sense rather than following tradition?

♦

All noise is waste. So cultivate quietness in your speech, in your thoughts, in your emotions. Speak habitually low. Wait for attention, and then your words will be charged with dynamite.—ELBERT HUBBARD.

LEADING ARTICLES



Sulfathiazole in Glycerine

By EDWARD H. WOOD, M.B., F.A.C.S.,* Ottawa, Canada

Lt. Col. R.C.A.M.C. (R.F.)

THE value of glycerine and alcohol in the treatment of tissue infection, as outlined previously, was well established some years ago.¹ Now the efficacy of the local application of sulfonamides has become generally recognized.

In facing this situation, the problem was how to best maintain the value of the former and adopt the latter. Another question arose as to the satisfaction of the advocated methods of application of the sulfonamides. As to the latter question, it is evident that there are objections to the use of the powder as such. This need not be enlarged upon; the mere fact of the efforts being made to incorporate it in a vehicle is sufficient proof thereof.

As to the vehicle for the sulfonamide powder, various combinations of petroleum products are suggested. The objection to these is twofold in the main: (1) the petroleum acts as an inhibitor of the drug, in that it is water-proof and so seals off the drug from the tissues and bacteria to a substantial degree, varying with the type of preparation; (2) such preparations cannot be left in the tissues or cavities as petroleum then becomes a foreign body, cannot be absorbed by the tissues and therefore becomes walled off into pockets of encysted pools.

Another form of vehicle is a non-oily paste. These pastes are more or less firm in consistency and do not flow freely into cavities or interstices of wounds.

Referring to alcohol and glycerine, the alcohol element must be discarded. It is incompatible with the drug, therefore only the glycerine of this original combination could be retained to combine with the new drug. The value of glycerine, beyond being a suitable vehicle, may be summed up in the following modified quotation from the original article on Alcohol and Glycerine: "A

dehydrating agent such as glycerine causes a flow of lymph to the surface, carrying with it toxic products of infection as well as the bacteria. It reduces the tissue swelling and intra-tissue pressure, thus allowing a greater blood supply. There is an increase in the determination of the system's antibodies to the infected part, thus assisting nature to overcome the infection. Glycerine, besides being hygroscopic in action, is definitely antibacterial and so the bacteria discharged into the dressing become the prey to this action."

Sulfathiazole was chosen as being the most generally suitable in the types of cases under consideration, though the other known preparations may be used if the type of infection should so indicate. It is likely that the future sulfonamides which may be produced as time goes on may also be exhibited in this vehicle. Several strengths of sulfathiazole in glycerine were tried. The result has been that 30% sulfathiazole in glycerine has been found generally the most satisfactory. No stronger mixture is suggested, but circumstances may require as little as 5%. One of these circumstances is the sensitivity of some individuals to the drug.

The preparation is easily made by mixing the two ingredients in a clean mortar with a clean pestle. A smooth cream results which is put into a clean jar. There is no apparent need to sterilize the mixture. It is known for convenience as "Sulfathiazole and Glycerine Cream 30%." This cream has none of the disadvantages of the other preparations. It is chemically stable. It is easily made and has a wide field of usefulness. It stands extremes of temperature well.

Sulfanilamide alone and mixed with sulfathiazole in varying proportions was tried. These preparations are not as physically satisfactory as sulfathiazole, alone, in glycerine. For example: if 10%

*From the Surgical Service of the Ottawa Civic Hospital.

of the sulfathiazole is replaced by sulfanilamide, i.e., 20% sulfathiazole, 10% sulfanilamide, glycerine q.s. — the preparation resulting is a heavy paste which does not lend itself to a wide variety of uses and which tends to cake easily.

It will be noticed that it is stated merely to see "that the mortar, pestle and container are physically clean." Attempts have been made in the laboratory to culture the resultant mixture but no bacteria could be grown. It is understood that all sulfonamide powders, as now produced, are sterilized at their source.

There is no objection to sterilization of the utensils, except that it complicates the preparing of the mixture.

After more than eight months of experience there are few evidences of unsatisfactory reactions. There has not appeared the slightest local tissue reaction. Considerable quantities have been sewn into the peritoneal cavity without the least sign of peritoneal irritation. There is, however, one circumstance wherein caution is urged viz., if there be a considerable area of denuded skin, there seems to be excessive absorption with a resultant more or less generalized dermatitis which is distressing but which clears up shortly with the removal of the local application and may not return if a weaker mixture is used, e.g. 5%. This untoward reaction has occurred in several cases of varicose ulcer with associated dermatitis. It is therefore advised that in all such cases the weaker mixture be used from the start and with caution. It should in such circumstances be applied to the skin i.e., painted on and covered with dry gauze. The gauze should not be soaked in the preparation before application.

The field of usefulness is so large that only a few conditions will be enumerated, some suggestions as to mode of applications given, and a few short case reports appended.

Minor Surgery and Accidents

The part is washed thoroughly with soap and water and dried with sterile gauze. The cream is then carefully rubbed into the wound and over the surrounding skin. Debridement or whatever indicated surgical procedure is carried out, more cream swabbed into the wound and the wound closed by interrupted suture without drainage.

General Surgery

Any otherwise clean surgical incision may well be contaminated from the air, breath, etc. Before closure, the various layers of the incision should be gently

rubbed with the cream and closure made with an excess of cream left in the wound. This is particularly valuable in wounds that are apt to become reddened and juicy, as in herniotomy. It has proven beneficial in the closure of breast amputations. Before any sutures are placed the whole area is gently rubbed with the cream. A non-irritant, quietly healing wound results, both at the skin edges and at the surface between the flaps and the chest wall.

While on the subject of putting the cream into clean wounds, it might be in order to outline a method of protecting abdominal incisions which has been in satisfactory use for many years. After the peritoneum is closed, the required number of stay sutures are placed with entrance and exits half inch or slightly more from the skin margins. They are left untied until the skin edges are closed with interrupted non-absorbable sutures. Next a wooden spatula or tongue depressor is trimmed (if required) to the length of the incision, wrapped in a few layers of gauze and placed over the incision. It is held in place by a finger at either end and the stay sutures tied firmly over the bolster which becomes a splint for the wound. Over this is placed a thin layer of absorbent and one or two strips of elastic adhesive strapping, on the stretch, at right angles to the wound. The purpose of all this is mainly to seal the sterile wound away from the air, blanket and ward infection, and to keep all and sundry from looking to see how the wound is getting on.

This looking at wounds has always been a source of aggravation both to the wound and to the careful surgeon. One knows that there is no value in a look, but how much harm one never knows. One can be absolutely sure of some. This knowledge is now all the more sure since the danger of blanket and ward infection is better understood. (Shades of Lord Lister!) The bolster, now a splint, does just this to the wound and so protects it during the carrying out of exercises which are so necessary during the immediate post-operative period, and particularly valuable in controlling embolism during this period. The bolster also prevents the stay sutures from cutting into the skin, is more simple and more quickly applied than bits of rubber tubing, and also saves rubber. The small dressing is all that is needed, (another economy), when there is no discharge from the wound. The absorbent, instead of gauze, permits the adhesive surface of the strapping to be

removed from the dressing with facility, and is cheaper. This dressing is left untouched till the eighth or twelfth day. The patient may be up and about with such a dressing and no harm done. All sutures are removed at once. To this routine closure now is added the gentle application of the sulfathiazole and glycerine cream, 30% to all layers of all wounds, including so-called "clean wounds." Can any of us claim to have attained absolute asepsis in our surgical procedures?

Further types of cases in which the cream has been found useful are: all rectal operations, especially abscesses where it is impregnated into the gauze packing; all types of abscesses; infected hands and fingers; carbuncles; boils; peritonitis from any cause; and, infected sinuses of all types. For peritonitis, it is poured into the abdomen in quantities up to 30 c.c., which contain 9 gms. of sulfathiazole. For sinus infections, the required quantity is put into a syringe with a rubber tube or canula attached. The tube is inserted into the sinus, and the tip thereof threaded down to the base of the sinus, or as far as possible, and the plunger of the syringe gently pushed home until the cream wells up to the surface. Such an application may be made daily. The same method is applicable to all infected cavities such as empyema, mastoid, and so on.

Leucorrhea

Here the cream may be swabbed over the vaginal mucous membrane after it has been carefully wiped with dry absorbent or applied by means of a tampon. In all types of pelvic repair the cream is gently rubbed over the entire operative wounds before any sutures are placed.

Burns

The only references to the use of sulfonamides in glycerine, that have been found after extensive search of the literature, is the following quotation. "The Edinburgh School recommends the application of sulfanilamide and glycerine." This is under the heading of "Burns" in two papers by Broster (2 & 3).

The local procedure recommended is: burns should be treated as soon as possible; all loose pieces of skin and foreign matter should be removed, as far as can be with facility and without pain, and the cream swabbed freely over the burned area. The whole is covered with paraffined mesh, then a few layers of gauze followed by at least one inch thickness of sterile absorbent cotton, and

the whole bandaged firmly with round upon round of gauze bandage. This dressing requires changing in two to three days at first, but later may be left longer. On the face it is well to use little or no dressing and to simply apply the cream, daily at first, then less frequently.

Osteomyelitis

After thoroughly removing infected bone from healthy tissue, the entire cavity is flooded with the cream. Vaseline gauze is lightly packed into the cavity, and again the area, including the gauze, is flooded with the cream. Vaseline gauze is placed over the wound area and a cast applied. Before placing of the gauze, a Carrel tube is laid into the cavity next to the bone. The open end of the tube is brought out through the cast. Further applications of the cream are made through this tube without removing the cast. These injections through the tube should be given two to three times a week and in varying quantities according to the size of the involved area. This controls the odor and makes changing of the cast much less frequent, as well as keeping down the infection in the bony cavity.

Tonsillectomy

After bleeding has been controlled, the cream is gently swabbed into the tonsil cavity or a sponge soaked in the cream held therein for a minute or two. This greatly reduces the local postoperative reaction.

Sloughing malignant tumors: Infection and odor herein can well be controlled by the frequent application of the cream either directly or by soaking the gauze that covers the mass in the cream before applying the dressing.

Pre-operative Skin Preparation

The cream has been very useful as the sole agent in cases where the skin is excoriated (see case No. 5). It has also proven satisfactory on normal skin. The area after the usual shaving and washing is cleansed with ether, dried, and the cream freely swabbed over the operative area.

Compound Fractures

After debridement the cream is injected well into the site of fracture, the wound left filled with the cream—but not sutured—followed by usual dressing—setting of fracture and fixation in skin plaster cast.

Case Reports

The following case reports are illustrations of some of these applications:

(1) A. J., boy 10: acute gangrenous, obstructed appendix, retrocecal with abscess formation. Appendectomy and drainage left a profuse discharging sinus of fifteen days' standing. The cream was injected into the tip of the sinus by means of a catheter on a 10 c.c. syringe. This instillation was carried out daily for five days. Two days later the sinus closed and remained so.

(2) Mrs. J. A., age 68: exploratory operation for a large mass in upper right abdomen. An abscess containing about twelve ounces of pus and many faceted gall stones was opened. The contents spilled freely into the peritoneal cavity and was removed as far as possible by suction and gentle sponging. A large cigarette drain leading from the upper end of the abscess cavity, down along the sulcus lateral to the ascending colon was brought out through a stab wound in the right iliac region; 30 c.c. of the cream were poured freely into the abscess and peritoneal cavities and the incision tightly closed after swabbing it with the cream. The drainage was removed gradually and completely in six days. Recovery was uneventful; highest temperature 101.4°, normal in three days. The patient was discharged on the fourteenth post operative day.

(3) Mr. K. L., age 32: acute perforation of the gall bladder of five hours' duration with board-like rigidity. The gall bladder was removed; drainage and cream as in case (2). Recovery was uneventful, and the drain was completely removed in five days. The patient was discharged on the twelfth post-operative day.

In cases two and three, the method of the drainage might be stressed. This follows the natural course of leakage from the upper right abdomen, down the lateral gutter or sulcus to the region of the cecum.

(4) Mr. R. S., age 41: acute perforation of an ulcer on the anterior wall of the duodenum of four hours duration. An attached leaf of omentum was gently laid over the opening and secured by two chromic O-catgut sutures, tied without tension. No attempt was made to otherwise close the perforation. Some of the free fluid in the peritoneal cavity was removed by suction; 20 c.c. of the cream was flooded into the peritoneal cavity. The wound was closed, after creaming, without drainage. The patient made an uneventful recovery and was discharged on the sixteenth post-operative day.

In cases two, three and four, wherein there was wide-spread soiling of the peritoneum, and in which the cream was applied in not more than five hours elapsed time, there was no postoperative distension or abdominal rigidity.

(5) Mrs. S. C., age 49: this woman came to operation with a colostomy following a Mikulicz operation for adenocarcinoma of the sigmoid. The subsequent clamping of the spur had involved the small bowel, produced an ileosigmoidal fistula which emptied the small bowel contents through the colostomy opening. The skin of the abdomen was, to a large extent, excoriated and inflamed as the result of the digesting action of the small bowel effluent. It was not a pretty picture or pleasant operative prospect. The cream was swabbed freely over the abdominal skin, the day before operation, with remarkably prompt and profound relief of the intolerable burning. The same procedure was again carried out immediately preoperatively in the operating room. No further skin preparation was used. It should be inserted here that the patient was given sulfaguanadine, 1.0 grammes q.i.d. for seven days before the operation, and the colon irrigated with 0.8% solution of sulfanilamide daily. Through a left rectus incision the sigmoid was freed from the anterior abdominal wall and the ileum cut away from the sigmoid. This left the ends of the ileum free. They were joined by end-to-end anastomosis. The sigmoid presented almost the same picture, there being only a bridge of mucous membrane and bowel wall about three-quarter inch wide joining the two ends. This mucous membrane was cut away, care being taken not to interfere with the marginal vessels beneath. The ends of the sigmoid were trimmed and joined by end-to-end anastomosis. Attached omentum was tacked around both of the anastomoses, and 30 c.c. of the cream flooded into the area. A large cigarette drain from this region was brought out through the old colostomy hiatus and the operative incision closed after creaming.

Postoperative Care and Course

Nothing was given by mouth for three days, then clear fluid, cautiously increasing the amount during three days; general fluids three days, etc. One transfusion of 500 c.c. was given immediately and intravenous 5% glucose, 500 c.c. b.i.d. for four days. Syntropan (a synthetic atropine-like preparation) 1 ampule q.4.h. for three days, this with

the object of keeping the intestinal tract quiescent; Pantopon for pain, gr. $\frac{1}{6}$ p.r.n., was used instead of morphia with the same objective, so lessening the stimulating effect of straight morphine. There was no vomiting or distention. The abdomen remained soft and flat, i.e., no evidence of peritoneal irritation. The highest temperature was 101.2° per rectum on the second and third days, temperature became normal on the sixth day and remained so. Drainage completely removed on the seventh day; the bowels moved without aid on the sixth day. Patient's discharge was delayed until she was strong enough to travel some two or three hundred miles to her home, which was the thirty-fourth day. Again note that even after definite and extensive peritoneal soiling in this case, there was no local inflammatory or infective process.

This brings us to the point which appears to be the most salient, i.e., the value of such a preparation in fresh wounds. The following suggestions are made in order to bring to the injured service man or civilian the value of modern Chemotherapy as early as possible. They are based on no experience with war wounds but on the inhibitory value of the cream in operative surgery.

Dr. J. M. Murray of our staff has had an opportunity of applying the cream in conditions closely allied to active service. Following a railway wreck, he treated six severe cases of compound fractures by debridement, injecting the cream into the site of the fracture and enclosing the limbs in plaster without suturing the wounds. All wounds remained clean and healed by granulation. The fractures healed in the normal time. There was no significant rise in temperature.

Moorhead (5) refers to the first six hours after injury as being the "contamination phase"; thereafter comes the "infection phase." He calls the first phase the "Golden Period" of treatment. It will be noted that in the last four cases presented, the cream was applied in the "golden period" and although the peritoneal cavity was surely well sprayed with bacteria, no "infective phase" appeared.

Moorhead advises the free use of, preferably, sulfanilamide powder and especially in the sixth hour "contamination phase." The time element he maintains as the most important. There is total agreement with all this, but, how can sulfanilamide powder be successfully applied to penetrating wounds, be they into soft parts or cavities? Cer-

tainly, on active service it will rarely be feasible to carry out operative treatment of wounds before six hours have elapsed. It is therefore herein urged that sulfathiazole and glycerine cream 30%, or some similar preparation be on hand as far forward or over as broad a field as possible, and at the first opportune moment a catheter or cannula attached to a syringe (say 20 c.c.) be inserted as far as can be into all wounds, and the entire wound area flooded with the cream no matter where they be located or how complicated. This need not be a sterile procedure, and can well be carried out by orderlies or stretcher-bearers as well as medical officers. This cream will stand up under extremes of temperature and may be transported with facility. The cream resists contamination, and before the "infective phase" would appear to be, at least, inhibitory to a wide field of bacterial flora. This early and thorough application of chemotherapy should prolong the "Golden Period," postponing the "infection phase" to such an extent as to bring the great majority of wounds to operation before infection has occurred.

Reed and Orr have shown that the comparative value of the sulfonamides puts sulfathiazole in first place in its beneficial results in the prevention of gas gangrene due to the group of causative organisms as a whole. They also point out that the time element is most important, showing that, up to six hours after the introduction of the spores, sulfathiazole is most valuable, but with a more prolonged elapsed time its efficacy rapidly deteriorates in the power to prevent the development of infection and gas gangrene. They also conclude from their investigation that "local treatment is superior to oral treatment."

They bemoan the fact that the elapsed time in war wounds will, in general, be beyond the six-hour period. Certainly the time before a wounded man can be operated on will, in far too many instances, be well beyond this period. This paper is presented to show how such an unfavorable situation may be alleviated.

The true value of such a procedure can but be ascertained by practice. This paper is presented, perhaps in haste, in the hope some in authority in the medical services of the forces will give it a thorough trial.

Summary

1. A simple and practical vehicle for sulfathiazole is presented, i.e., Glycerine.
2. The wide field of usefulness in general surgery is outlined.
3. The probability of its value in war

surgery is suggested and it is urged that it be given a thorough trial.

4. The value of the local application of sulfonamides has long since been accepted.

5. The use and value of sulfathiazole and glycerine cream as a preoperative skin preparation is suggested.

6. Attention is drawn to the "contamination phase" of wounds, and the early application of chemotherapy is advocated.

References

- (1) Wood, E. H.: Alcohol and Glycerine in the Treatment of Pyogenic Infections, *Canad. M. Assn. J.*, 1936, 35:168.
- (2) Broster, L. R.: A Survey of War Surgery, *Brit. M. J.*, 1941, 2:273.
- (3) Idem: A Survey of War Surgery, *Annals of Surgery*, 1941, 113:8P1.
- (4) Reed, G. and Orr, J. H.: Local Chemotherapy of Experimental Gas Gangrene, *War Medicine*, 1942, 2:59.
- (5) Moorhead, J. J.: War Wounds, *Am. J. of Surgery*, 1942, 56:338.

Ocular Changes as an Aid in General Diagnosis*

By OSCAR B. NUGENT, M.D., F.A.C.S., F.I.C.S., Chicago, Illinois

IN ORDER to recognize and locate pathological changes in the fundus of the eye, it is essential that one must be able to recognize also the normal findings and landmarks.

A normal retina (Fig. 1) presents certain characteristic findings which are comparable to all retinæ. At the geographical center of the retina is located the fovea centralis, about 3 mm. to the nasal side of which is located the nerve head or papilla from which emerge the arteries and veins and into which pass the neuritic fibers of the retina on their way to the visual centers in the brain. The nerve fibers, however, cannot be seen in the normal fundus.

The nerve head is round but, under certain refractive influences, sometimes appears slightly oval. It has a greyish pink or pinkish red hue and the blood vessels emerge slightly to the nasal side. To the temporal side is seen a lighter area, slightly cupped, known as the physiological cup. At the bottom of the cup or excavation is usually seen a few dark spots which is the stippling caused by the lamina cribrosa through which the nerve fibers pass. The physiological cup or excavation varies in size in different eyes. It may be small, appearing to be the size of a pin head, or it may be quite large occupying the whole temporal half of the nerve head or even larger extending further towards the nasal side as well.

The outline or edge of the normal nerve head is usually quite clearly

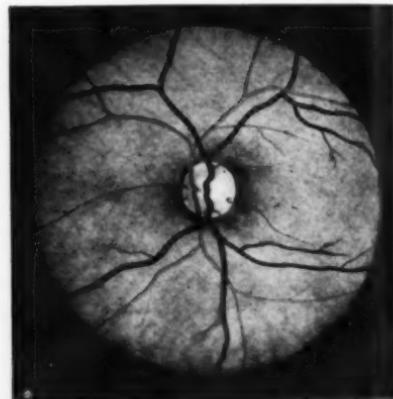


Fig. 1: The normal fundus (retina) of the eye (Oatman).

seen. To the temporal side of the nerve head, and sometimes completely surrounding it, is a white crescent or ring formed by the showing of the sclera and outside of this, and to the temporal side, and at times surrounding the nerve head, is a black ring which is caused by a showing of the choroid. The optic nerve head is about 1½ mm. in diameter but, when seen with the ophthalmoscope, appears to be from 10 to 18 mm. in diameter. This fact should always be kept in mind when attempting to locate pathological changes in relation to the nerve head.

The blood vessels supplying the retina are the central retinal artery and vein with their branches which are plainly

*Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College.

visible in the retina. The retina can be divided into quadrants for convenience in describing its blood supply as (a) the superior temporal, (b) the superior nasal, (c) the inferior nasal, (d) the inferior temporal quadrant. Each quadrant is supplied by a branch from the central retinal artery and receives its name according to its location. (a) the superior temporal artery, (b) the superior nasal artery, (c) the inferior nasal artery, (d) the inferior temporal artery. The same can be said of the veins. The veins, however, are less uniform in their location than are the arteries.

When the retina is in focus, light streaks are observed upon the arteries which are called *light reflex* (less marked on the veins). The arteries do not pulsate in the normal retina. Venous pulsation occurs in about 60 to 75% of normal retinas and usually at the disc near the center.

The relation of the artery to the vein in the retina is not always uniform. Usually, however, the arteries are in front of the vein in the area surrounding the nerve head and behind the veins in the periphery of the retina. The superior and inferior retinal arteries form a large curve or arc above and below the macula giving off branches, some of which proceed towards the macula but never cross or enter it.

As the blood vessels course towards the periphery of the retina, they become gradually smaller in caliber and smaller vessels are seen to branch off. The capillaries are so small that they are not seen in the normal fundus. The arteries are often seen to cross the veins or to twist themselves around the vein usually one half turn or one and a half turns. An artery is never seen to twist around an artery or a vein around another vein.

The color of the arteries is bright reddish yellow while the veins have darker color, a wine red or a reddish blue, and the veins are two to three times larger than the arteries.

The macula lutea is the portion of the retina which possesses the greatest visual acuity and is situated about 3 mm. to the temporal side of the nerve head and on a level with its lower border. It is easily located because it is much darker than the surrounding yellowish red retina. (From its center is seen the foveal reflex which is a bright light reflex caused by the light being reflected by the internal limiting membrane which is concave at this point and acts as a

concave mirror and from its periphery is seen a whitish glistening ring or halo called the macular reflex. The fovea is best seen with subdued light. There are many changes in the appearance of the normal fovea due to the patient's complexion, age, color of eye, etc. There are no visible blood vessels in the immediate vicinity of the fovea.

In some individuals, the retina appears to have rather large dark spots arranged in such a manner as to give the impression of mosaic or large islands between which are pinkish streaks representing the choroidal vessels. This condition is called tessellated retina, choroidal fundus or tigeroid retina. It is not considered pathological but is caused by the choroidal pigment showing through, due to a lack of sufficient epithelial pigment to prevent it.

Pathology: In describing lesions of the interior of the eye of a general diagnostic value in such a brief presentation, it will be necessary to eliminate much of the finer details and confine our attention to the grosser findings. Those to be discussed here are retinal hemorrhages, retinitis (albuminuric, diabetes, syphilitic leukemic) embolism of central retinal artery, thrombosis of retinal vein, papillitis, papilledema, optic nerve atrophy, glaucomatous atrophy and choroiditis.

Retinal hemorrhage is not as a rule hard to recognize as such; hemorrhages are seen embedded in the retina and, when found, the following conditions should be looked for. They are present in about 20% of new born babies; especially in cases of protracted labor and forcep deliveries. In the adult, hemorrhages of the retina are of great diagnostic importance and may indicate the presence of such systemic diseases as hypertension, nephritis, diabetes, arteriosclerosis and metabolic diseases, circulatory disturbances, cardiac hypertrophy, valvular stenosis, changes in the blood as in infectious diseases, typhoid fever, malaria, severe sepsis, influenza and tuberculosis.

Albuminuric retinitis; hypertensive retinitis. (Fig. 2) This presents a picture quite characteristic and consists of greyish or dull white ("cotton wool patches") areas of exudate in the retina surrounding the disc; while, round the macula, the spots are smaller and round, varying in size, and there are spokes, or white lines of exudate, forming in such a manner as to give the impression of a star which is caused by the white lines

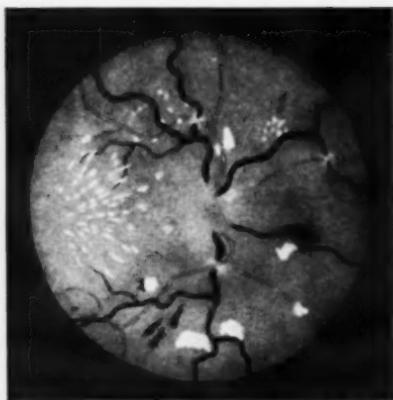


Fig. 2: Albuminuric Retinitis (Oatman).

radiating in a uniform manner from a given point. There is a haziness of the disc and retina and there may also be hemorrhages in the retina. This condition would immediately lead one to suspect nephritis, as it occurs in about $\frac{1}{2}$ of all cases of nephritis, but is much more common in cases of chronic interstitial nephritis. In the cases of puerperal nephritis, there may also be a retinal detachment associated with it. The earlier in pregnancy these cases occur, the worse the prognosis. Fortunately, the greatest number appear in the later months of pregnancy.

Diabetic retinitis (Fig. 3) does not occur in a very large percentage of diabetes; it shows up in the later stages and especially in diabetes in elderly people. Undoubtedly, it is often overlooked because of cataract which is not uncommon as a sequel to diabetes. It is more often bilateral, but may appear in one eye only. It consists of irregular, small, very bright, white spots which appear to be in clusters and are usually found in the retina to the temporal side of the nerve head and especially in and around the macular region. The smaller areas of exudate may coalesce to form larger areas. Hemorrhages are not uncommon; they are usually round and scattered freely over the fundus. Diabetic exudates are not found in juvenile diabetes. Due to the fact that albuminuria is not uncommon in the later stages of diabetes, it may be noted that the exudate may have much the appearance of albuminuric retinitis.

Syphilitic retinitis is not so easily diagnosed because it does not always pre-

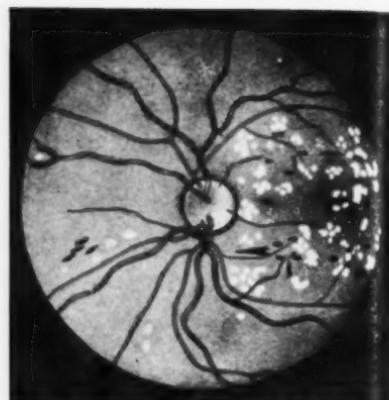


Fig. 3: Diabetic Retinitis (Oatman).

sent outstanding characteristics. Some of the findings are: dust-like opacities in the vitreous and especially in the posterior part. The retina surrounding the papilla is hazy and the papilla may be hyperemic. Yellowish spots surrounded by pigment may be seen in the periphery of the retina. There is a tendency toward the formation of new blood vessels.

Leukemic retinitis presents a picture quite characteristic. The fundus is pale and has an orange colored hue. The arteries are small and the veins are dilated and tortuous and often have white lines along the vein borders, and the veins are bright red. There may be white blotches surrounded by a red rim. There may be hemorrhages.

Embolism of the central retinal artery produces a characteristic picture. The whole fundus is pale; the arteries are reduced in size until they appear like threads or disappear from view. The veins are reduced in size especially near the papilla or they may be beaded. The retina soon becomes milky white; the disc outlines are not easily seen and the macula presents a cherry-red appearance. If a single branch of the artery is effected, the picture described above will be limited to the quadrant supplied by that branch.

The cause may be found to be valvular diseases of the heart; often a mitral stenosis is present, especially in endocarditis.

Angiospasm of the retinal artery may present the same picture as described in embolism of the central retinal artery. It is usually transitory. Angiospasm may be associated with general hyper-

tension, Raynaud's disease, erysipelas, whooping cough, migraine and quinine poisoning.

Thrombosis of the central retinal vein: All of the veins become greatly engorged with blood and are tortuous. The whole retina is spotted with hemorrhages due to the blood escaping from the capillaries. This may be caused by arteriosclerosis associated with nephritis, diabetes or syphilis. It may follow rheumatism, or influenza; also erysipelas or septicemia. It usually occurs in elderly people with cardiac or vascular diseases associated with nephritis.

Papillitis is, as the name implies, an inflammation, congestion and swelling of the papilla or nerve head. It is to be differentiated from papilledema or choked disc which, to the inexperienced observer, sometimes becomes a big problem.

In papillitis, the papilla is swollen and due to this and to the exudation, it appears larger than normal, the margins are indistinct and the disc presents a color of dull reddish hue.

Later, however, due to the exudate, it takes on a greyish or Whitish color. The arteries are usually normal in size, but may be slightly smaller. The veins are larger and darker in color and are tortuous. The arteries and veins, as they bend to enter the disc, form a sort of hook shape due to their elevation at the disc margin and, at this place, they may even be buried out of sight by the exudation. The disc is swollen up to 2 or 3 diopters.

Papilloedema (choked disc) (Fig. 4)

The papilla is swollen and edematous, elevated much higher than is found in papillitis even up to 9 diopters. It is, also, quite broad and the margins are quite well defined, sometimes described as having the appearance of a button. The color is a greyish red. The arteries are narrow and the veins are greatly distended. The vessels are elevated in the disc and they course back to the level of the surrounding retina. The vessels are often buried out of sight in the swollen part of the disc.

About four of every five cases of papilledema are due to brain tumors; meningitis with an abundant serous exudation in the subarachnoid space and hydrocephalus internum, brain abscess and gumma are some of the many causes.

Optic atrophy is a condition in which the disc is quite pale. The pallor affects the whole disc and must be distinguished from the paleness of the physiological cup. The blood vessels are usually contracted and are smaller in caliber than normal. The disc edges are quite sharply defined and there is a slight cupping of the disc (also to be distinguished from the physiological cup).

This may be the very first sign of tabes and may be due to syphilis of the central nervous system. There may be no other symptoms of tabes for years. Atrophy may also be due to general paralysis or multiple sclerosis. It is occasionally ascribed to chronic myelitis, spastic paraparesis, syringomyelia, bulbar paralysis agitans and Friedrich's ataxia.

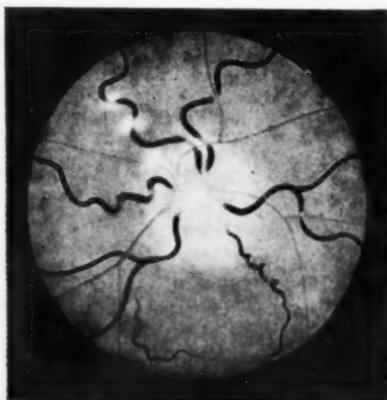


Fig. 4: Papilledema (choked disc) in Brain Tumor (Oatman).

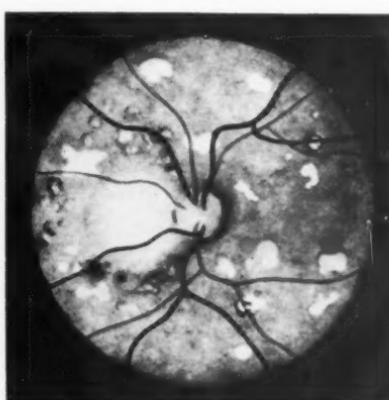


Fig. 5: Choroiditis Disseminata (Exudative Stage) (Syphilitic) (Oatman).

Exudative choroiditis (Fig. 5). The outstanding fundus picture is in the later stage when pigment begins to show through the retina and choroidal coloboma is present. These spots may appear in the posterior part of the fundus (disseminated choroiditis) or on the anterior part (anterior choroiditis). The cause is usually acquired syphilis; very seldom is it associated with congenital syphilis. In many cases, the cause is obscure sepsis; anemia and disorders of nutrition are sometimes thought to be the cause.

Myopic choroiditis. The changes are similar to disseminated choroiditis. The process is not inflammatory but degenerative in character.

Glaucomic disc. The excavation may involve only the temporal side of the disc as in the early stage and the whole disc later. The blood vessels bend over the edge of the excavation and sometimes can be seen coursing to the bottom and then again on the floor. The arteries may pulsate, especially if slight pressure is applied to the globe during the examination.

Tumors in the fundus are diagnosed by the elevation of the retina above its normal surface. When a swelling is suspected, it can be measured as to height by focusing the normal plain of the retina near the swelling or protrusion noting the lens over the optic nerve and then adding plus lenses or decreasing the strength of minus lenses until the surface of the protrusion is in focus and the difference in lenses will be the reading as to the height of the tumor in diopters. Three diopters represent a protrusion or elevation of 1 mm. Therefore, if the elevation was six diopters, it is calculated to be two mm. high.

Most tumors seen in the fundus are malignant. Tumors must be differentiated from detachment of the retina; this is not always easy. The detached retina has a pale yellowish appearance while the color is more normal over a tumor.

In detachment of the retina, the blood vessels often have a broken appearance due to the folds in the retina. This does not occur in case of tumors.

231 West Washington St.

Summer Asthenia and Addison's Disease

By DR. EDUARDO CRUZ COKE,* Santiago, Chile

PEOPLE who spend summer at the seaside often present a pigmentation of the skin, weakness and astyndia that impresses the physician as a case of incipient Addison's disease (hypoaddrenia). This confusion is due to the fact that certain individuals present two entirely different phenomena, in the summer, producing the above mentioned syndrome that is not related to the adrenal gland.

In warm climates, persons who are on a vegetable deficient diet may become pigmented due to loss of ascorbic acid (vitamin C) as a result of increased perspiration. This pigmentation, in persons exposed to the sun, is very similar to that seen in patients with Addison's disease. This is not as strange as it might seem as both originate from the intermediary products of melanic metabolism.

This pigmental lability is caused by a sudden depletion of the stored ascorbic acid, as one of its functions is to maintain the tyrosine metabolism at an adequate level proportional to the white color of the skin.

Simultaneously, the rise in tempera-

ture in summer produces a hypofunction of the thyroid gland. This decreased thyroid activity can be produced experimentally, and may also be observed in summer in normal individuals without surpassing the physiological limits. In some cases, however, this thyroid hypofunction reaches a level that is characterized by a marked asthenia.

Third, we must remember that in summer the increased water ingestion brings on a greater loss of sodium chloride; the normal individual's instinct does not always adapt itself to the extra ingestion of needed salt. Under normal conditions, the organism reacts to a salt reduction with an increased function of the adrenal cortex. However, this is not always the case, because some individuals do not possess the capacity of increasing their adrenal cortex function.

The syndrome of summer melanoderma and asthenia is not primarily an adrenal disease but a derangement of the thyroid gland and ascorbic acid metabolism. The role of the adrenal gland is of secondary importance.

Treatment: Thyroid extract is given in small doses (5 to 10 cc. daily) and ascorbic acid in daily doses of 10 to 20 cc.

* Lab. De Química Fisiológica Y Patológica, Universidad De Chile.

Goiter, Cancer and Diabetes

By EMILIAN O. HOUDA, M.D., Tacoma, Washington

A SWISS authority expressed his personal opinion, in current literature of a quarter of a century ago, that the revelation of primary factors of one of three unsolved diseases would point the way to the revelation of like factors for the remaining two. The afflictions referred to were goiter, cancer and diabetes, all three of which are very prevalent in Switzerland and other countries where goiter is endemic. That surmise, as the many others expressed in literature on each of these afflictions in the last half century, was founded on clinical rather than immediately factual observations in a proper laboratory.

In a personal communication from the late Professor A. J. Ochsner, written in 1921, he advanced twenty clinical points in support of his contention that microbes would be proved in time to be the ultimate or underlying factors for malignant disease. He supported this contention with the work done at that time by Dr. J. W. Nuzum. The latter had cultivated a micrococcus from cancer of the human breast. Repeated injection of this organism into the breast of an adult dog was followed by the development of cancer. Nuzum had then spent seven years in this work. Scoffers regarded the injection of live microbes as inciting merely one of the many forms of "chronic irritation", justifying their criticism on the ground that microbes cannot create body cells. Much has happened since then.

Today, as reiterated by every writer or speaker on any of these three diseases, primary factors remain unknown. However, pure science has no room for mere guesses when unsupported by tangible facts. Dr. Hektoen, the present director of the National Cancer Institute, said in a recent issue of *Time* magazine—"Chronic inflammation lays the foundation for the development of cancer of the breast." And what else other than micro-organic life can cause continuing inflammation?

Ordinary goiter is cumulative evidence of rather wild growth of thyroid cells, but ever limited within capsular membranes of the affected gland. The cells of thyroid cancer are not limited in growth within capsular membranes. They eventually break through contiguous structures, often traveling into blood capillaries and lymph channels early, and later being carried to distant parts

to implant themselves and multiply their kind without resistance from any known source, to form secondary cancers of which the original growth is ever a clear-cut pattern.

Diabetes, as generally regarded by the profession and the laity, is merely a combination of many symptoms that are superimposed upon a primary disease of the gland which normally makes insulin in quantities to meet the needs of normal sugar metabolism.

As yet, primary factors of neither of this triad of clinically correlated afflictions are recognized by the profession at large. This despite the fact that those which cause goiter have been revealed for more than fifteen years. The essential requirement for their routine exposition, then, in worthwhile objective forms, is a matter of processing goitrous tissue through the only method by which they are revealed consistently, in any run of removed goiters.

Microbes, not a supposititious lack of an inorganic element, are the underlying factors of thyroid disease. Indeed, as Pasteur postulated in his time—"true diseases are all of micro-organic origin," a statement which has stood unchallenged since first uttered, as Pasteur himself did in a contra-challenge of the French Academy of Medicine. As later shown, then without fear of contradiction from any source, such origin is revealable through one only of the few sciences that encompass the whole field of scientific medicine.

Micrococcus goitrogenes, with all that this name implies, was found present in and cultivated from the large majority of goiters personally studied. Its cultivation from specimen tissue, obtained aseptically immediately on removal of goiter, has been a matter of personal routine for many years. This organism not only subscribes fully to Koch's postulates, but a product made of mass cultures (anti-goiter vaccine) has long proved itself effective in the pre- and postoperative treatment of the active phases of thyroid disease.

Goiter is the very first tumor to be definitely proved as to most primary factors; and, since cancer of the thyroid gland appears late in the course of long unheeded thyroid disease, the same organisms present in this malignant phase are quite readily identified as common to the general run of endemic goiter.

In all instances, malignancy here as elsewhere is not a specific disease in the true meaning of the term. Rather, as the common sense born of extensive study dictates, it is a singular late phase of the preceding affliction in which cancer makes its initial appearance. For this last reason, goiter microbes are regarded as the ultimate or underlying factor of thyroid cancer.

Moreover, collateral studies of tissue obtained from the common run of surgical tumors (both benign and malignant) have shown the presence of micro-organic life in almost every instance. Those cultivated from either malignant or non-malignant tumors, I regard as having played a basic role in the development and progressive growth of the tumor from which they were propagated. A new field of tumor bacteriology is thus opened for qualified pioneers.

With two points of the above mentioned triad determined beyond question of doubt, thereby forming the base line of a suggested triangle, they each point to like factors which must account for the slowly degenerative pathology as usually present in the tail of the pancreatic gland of diabetics. This structural and physiological pathology has many of the degenerative features commonly found in the more accessible goitrous thyroids. When diabetic symptoms appear, as they frequently do in the course of active thyroid disease, one is justified in incriminating goiter's primary factors as the underlying cause. Other like factors of infectious nature probably account for the common run of diabetics in which a diagnosis of primary thyroid disease is out of question. The ideas which prompted mere surmises are now

crystallized in tangible facts, and the problem here is at last reduced to a mathematical formula—an equilateral triangle. Each point representing a common denominator for goiter, cancer of the thyroid, and the diabetic syndrome which appears in the course of toxic goiter.

To satisfy every honest doubt on this score, at the same time brushing aside the criticisms of scoffers, attention is directed to one outstanding reason why primary causes of either of this triad of diseases could not be revealed except through the last of the following basic sciences: (1) Anatomy, which is concerned only with gross structure; (2) Histology, which regards minute anatomy as observable with the microscope; (3) Physiology, which regards normal functions and purposes of every part of the body; (4) Chemistry, which is concerned exclusively with the 92 known elements of our universe, and their interplay through natural affinities in the construction of a limitless list of compounds; (5) Pathology, which is concerned exclusively with the complex and often bizarre departures from normal standards as determined through the first four of the mentioned sciences, which departures must ever be regarded as effects of primary factors, and regardless of whether the latter are known or still veiled in dark mystery; and (6) Microbiology, the most crucial science whose revealed items are absolutely necessary to a comprehensive appraisal of diseases in general, through which primary causes of more than a hundred specific diseases have been revealed thus far.

111 Fidelity Bldg.

Pulmonary Infarct

The first symptom of a pulmonary infarct is usually *hemoptysis*. Pain in the chest accompanies the spitting of blood or blood-tinged sputum. A moderate elevation of temperature and leukocytosis follow. Signs of consolidation and often a pleural friction rub will be found on examination.

On the roentgram, the infarct shadow will always be found adjacent to a pleural surface, either peripheral or interlobar. The typical triangular shape seen at necropsy will not be demonstrated unless both lateral and anteroposterior films are taken. The shadow is usually located in the lower portion of the lung

field and, in its early stages, is often sharply demarcated, except at the medial border. A pleural effusion may conceal the infarct, or the edges may become fuzzy, due to secondary bronchopneumonia.

Given such a history, the appearance of fever and increasing, foul sputum after some days or weeks would indicate that a lung abscess has formed, which can be located with the x-rays. If heart disease is present (one of the common causes of pulmonary infarcts), the degree of myocardial insufficiency becomes more pronounced.—E. CHESTER, M.D., in *Radiol.*, Dec., 1942.

Early Laminectomy for Spinal Cord Injury

By FOSTER KENNEDY, M.D.,* PETER G. DENKER, M.D.,†

RAYMOND OSBORNE, M.D.,** New York City

The general practitioner has a responsibility to the patient with an injured back. In all cases where the cord may seem to be severed, much good may be done by surgical exploration and removal of bony pressure. The patient has everything to gain and nothing to lose.

THE controversy over whether laminectomy should be performed more frequently in cases of injury to the spinal cord is reviewed, and a study of the literature is presented. There has been a pendulum-like swing from conservatism to radicalism and back to conservatism again. At present, most neurosurgeons seem to be excessively conservative in the treatment of this condition. Two illustrative cases in our experience at the Bellevue Hospital are presented. In these cases severe injury to the cord had been sustained, and, because of the apparent hopelessness of the situation, the neurosurgeons were reluctant to operate. However, they were finally persuaded to perform laminectomy, since we felt that nothing was to be lost, and possibly something might be gained, by such a procedure. In these cases definite lesions were encountered, which were helped by the surgical intervention. Scarring, fractures of laminae which did not appear in the roentgenogram, spicules of bone within the substance of the cord and other lesions were discovered when the cord was exposed; so it was felt that operation had really contributed a great deal to recovery in these cases. We, therefore, advocate more frequent laminectomy in cases of injury to the spinal cord, for the following reasons:

1. It is impossible to determine by neurologic examination, at the time of the accident, whether the cord has been completely severed or whether function has been physiologically interrupted.

2. Roentgenograms of the spine are by no means conclusive as to the presence of fracture of the laminae; on the other hand, spicules of bone may be pressing on the cord without appearing on the roentgenogram.

3. In the presence of manometric block, laminectomy should always be

performed, regardless of whether it is felt that the injury to the cord is complete or not.

4. The operative mortality associated with laminectomy is so low that it should not be a factor in decision to operate. The operation is much less dangerous than is a diagnostic laparotomy.

5. No statistically followed series of cases has yet been reported in which treatment with laminectomy was employed in alternate cases. Such a study is advocated to decide the merits of this operation.

6. When operation is decided on, laminectomy should be performed early, since a case of injury to the spinal cord is a surgical emergency, and a delay of two to six weeks for "spinal shock" to subside is a needless waste of time.

Illustrative Cases

Case Number One: J. L., aged 54; an Italian laborer admitted to the Bellevue Hospital Neurological Service on October 8, 1939, after having fallen down a flight of stairs the previous afternoon and injuring his back. Immediately after the injury, he noticed pain in the back of his neck, radiating down both arms. Twenty minutes later, he felt uncomfortable sensations in his feet and lower legs and was put to bed at home. The paresthesias gradually spread up his legs and lower trunk and that afternoon urinary retention appeared.

All the limbs were weak, but the shoulder girdle muscles were of good power; power in the hands was severely impaired. The legs were almost completely paralyzed. Deep reflexes were present in the arms, but diminished. The knee and ankle jerks were present on the right and could be obtained on the left only by reinforcement. The abdominal reflexes were absent. The plantars were equivocal bilaterally. All sensation was lost below the sixth cervical vertebra. The patient was not in shock.

Lumbar puncture was immediately performed, with a finding of 90 mm. of water pressure. There was a complete block of jugular compression and amyl nitrite. X-ray of the spine revealed a fracture of the articular process of the 7th cervical vertebra and backward displacement of the body of the 7th cervical vertebra.

Surgical consultation was obtained and it was the opinion of the surgeons that no operation be performed, but that the

* Attending Neuropsychiatrist, Chief of Service, Bellevue Hospital.

† Associate Attending Neuropsychiatrist, Bellevue Hospital.

** Resident Neurologist, Bellevue Hospital.

patient be kept in hyperextension. The next 24 hours revealed definite progression of this man's paralysis.

Lumbar puncture was repeated on October 10th; manometric block was again found. The patient was then seen by one of us (F.K.) who advised laminectomy.

Operation was performed by Dr. J. Lawrence Pool on October 10, 1939; laminectomy and removal of the arches of cervical 4 to cervical 7; the dura was opened longitudinally with exposure of the spinal cord. "Spinal cord was large, fusiform and yellowish. A small amount of clotted blood was found at the site." The cord was decompressed and the usual closure performed.

Immediately after the operation, power began to return in the legs and sensation slowly improved. At the end of four weeks the patient was able to stand. The legs were slightly spastic. The knee and ankle jerks were brisk; the left being greater than the right. Some weakness still persisted in the right hand. A slight reduction of sensation was found below the 7th cervical segment. Further improvement was gradually noted. The patient was discharged December 4, 1939, walking very well with only slight spasticity and needing no support. There was still a slight amount of weakness in the right hand. Sensation had improved markedly with a slight amount of hypalgesia present below T3 on the right and T10 on the left.

Case Number Two: F. K., a 23 year old tunnel worker, struck by a large boulder across his back on the morning of December 30, 1937, was immediately brought to Bellevue Hospital in shock. On examination he showed marked weakness in both legs, with hypalgesia and loss of sensation below L2. The abdominal reflexes were absent. The knee and ankle jerks could not be obtained. Vibration and position sense were absent in his legs. There was bladder and

rectal incontinence and perianal sensation was also lacking.

A lumbar puncture was performed. Spinal fluid was blood tinged. Complete manometric block was present. X-ray showed a comminuted compressed fracture of L 1, 2, 3, and 4 vertebrae. This was especially evident in the second lumbar vertebra which was completely split by the vertebra above it. There were also fractures of the 7, 8, 9 and 10 ribs on the right.

The patient rallied quickly from his initial shock, so that a laminectomy was performed by Dr. A. Kaplan that same day (December 30, 1937). The arches of the vertebrae T 12 to L 4 were exposed and the usual laminectomy performed. A good deal of liquified blood infiltrating the superficial fascia was found dissecting the fascia away from the lumbar space. This blood did not clot. The fascia and muscles were stripped away subperiosteally from L1 to L3 inclusive, revealing a fracture of the second lumbar spine. Laminectomy exposed the dura, which, at its lower border, was found to be definitely constricted by a shelf of bone. The spines and laminae of L1 and L3 were also removed and the cord began to pulsate freely. A fine catheter was then introduced in both directions extradurally and no obstruction was encountered. The wound was closed in the usual manner.

Gradual improvement occurred, the patient began to void spontaneously in one week and the abdominal reflexes returned in two weeks. Power in his legs slowly returned, and the patient was out of bed in March, 1938, gradually walking about more. He was discharged on August 30, 1938 with excellent power in his legs and only a slight sensory change persisting below L1 and 2 on the right. At the time of discharge, he was voiding well and had good control of the rectal sphincters.

Coming Articles

Principles of Management of Nasal Deformities — By M. I. Berson, M. D., New York City.

The Tired, Weak, Exhausted, Depressed Patient — By J. A. Turnbull, M. D., Boston, Mass.

Psychosomatic Aspects of General Practice — By Edward Weiss, M. D., Philadelphia, Pa.

Bronchial Asthma: Clinical Considerations — By L. H. Cripe, M. D., Pittsburgh, Pa.

Simple Resuscitation of the New Born — By R. L. Gorrell, M. D., Clinton, Iowa.

Early Syphilitic Lesions of the Cervix — By J. W. Sharp, M. D., Dallas, Texas.

Wrong Use of Folliculine (Estadiol, Feminine Hormone) — By E. Cruz Coke, M.D., Santiago, Chile.

Treatment of Intestinal Protozoa and Helminths — By Drs. Faust, D'Antoni, and Savitz, New Orleans, La.



GRADUATE COURSE

Head Injuries, Part II

Methods and Value of Roentgen Examination of Head Injuries

By E. L. JENKINSON, M.D.,* and
W. H. BROWN, M.D.,
Chicago, Illinois

ROENTGEN examination of the skull following head injuries has become adopted almost universally as a routine measure. Proper use and methods are important, however, to derive full benefit from this diagnostic procedure. All physicians must understand the limitations as well as the value of roentgen examination of the skull. Lethal head injuries are not unusual in the absence of post-mortem evidence of fractures of the cranium. The presence or absence of a skull fracture, therefore, does not necessarily determine the presence or absence, location, severity, or prognosis of brain injuries. Treatment of the brain injury always being of primary consideration, *immediate treatment of head injuries rarely requires roentgen examination.*

Most head injuries are now treated nonsurgically. The roentgen examination should be postponed until there is definite clinical improvement or until all signs and symptoms of brain injury have disappeared. A thorough and careful roentgen examination is then advisable and may be accomplished without harm to the patient. Patients without skull fractures may become ambulatory, whereas those with demonstrable fractures require additional supervision even in the absence of clinical symptoms or signs.

Three conditions warrant surgical intervention following head injuries: (1) middle meningeal artery hemorrhage, (2) subdural hematomas, and (3) depressed skull fractures with localized signs and symptoms of cerebral injury

or irritation. Roentgen examination by means of mobile roentgenographic units may corroborate one of the above conditions when the clinical evidence is not sufficiently conclusive. Minimum manipulation of the head is essential. An anteroposterior and both lateral views usually can be obtained. Whenever possible a view should be taken with the point of maximum injury centered nearest to the film. This view demonstrates most fractures of the cranial vault. (The use of a Lysholm grid frequently enhances the diagnostic quality of portable films.)

The demonstration of skull fractures by means of portable roentgen examination of patients having signs and symptoms requiring surgical procedures is valuable confirmatory evidence. The absence of a demonstrable fracture, however, should not exclude or postpone surgical intervention if definite clinical indications are present. The classical signs of a middle meningeal hemorrhage include: (a) dilatation of the pupil on the side of the hemorrhage, (b) contralateral evidence of motor weakness, and (c) progressive stupor and coma with or without a lucid interval. Such cases require surgical intervention regardless of roentgen findings. The localization of the hemorrhage should depend upon clinical findings also as the arterial injury can occur on the side opposite the bone injury. The clinical evidence of a subdural hematoma is frequently indefinite and misleading. Symptoms may develop hours, days, months, or even years later. The onset is frequently insidious and the manifestations protean. Subdural hematomas may follow trivial injuries. Bilateral hematomas are not uncommon. Roentgen examination seldom provides definite information. Encephalograms or unusual calcification may be valuable.

All patients with depressed skull fractures do not require surgical procedures. Surgery should be limited to patients with localized signs of cerebral injury or irritation. Portable roentgen examination may corroborate the exact location and extent of the depressed fracture.

*Associate Professor of Radiology, Northwestern University School of Medicine.

The principal value of roentgen examination following head injuries is in the large group of patients not requiring surgical treatment. Roentgen examination of these patients should be postponed until clinical signs of cerebral injury are negligible or absent. The patient should be in sufficiently good condition to be moved to the roentgen department on a stretcher and should be able to cooperate. Roentgen examination of such patients should determine (a) the actual presence, absence, extent, and character of a skull fracture; (b) the presence or absence of depressed fragments; (c) the possibility of serious injury to vital structures adjacent to any fracture present; and, (d) the necessity of additional rest and supervision in the absence of clinical evidence of brain injury.

Certain views of the skull are essential to demonstrate or exclude fractures. (Detailed descriptions of all positions may be found in any good textbook of diagnostic roentgenologic technique.) The positions which must be taken include: (1) a posterior-anterior or frontal view, (2) an anterior-posterior or occipital view, (3) a right lateral or parietal, (4) a left lateral or parietal, (5) a submental-vertex or basilar view, and (6) the so-called nose-chin position. Other positions are optional. The submental-vertex view may be reversed if there is a question of injury of the facial bones. Injuries of the nasal bones require additional views.

Stereoscopic views of the cranium are of value in the presence of questionable fractures but those taken of only one side of the skull are never a substitute for the opposite lateral view. Perfect alignment of the patient's head and absolute immobilization are imperative for a satisfactory examination.

Most fractures of the frontal or occipital bone are demonstrated in the posterior-anterior and anterior-posterior views. Displacement of a calcified pineal body is valuable evidence of cerebral injury of the hemisphere opposite the displacement. The two lateral views demonstrate most fractures of parietal and temporal bones. The mandible and other facial bones should be included on the lateral films. The submental-vertex and nose-chin positions most frequently demonstrate basilar skull fractures anterior to the foramen magnum. Fractures of the facial bones may be demonstrated but are easily obscured. Haziness or obliteration of any of the paranasal sinuses may result from an ante-

rior basilar fracture with extravasation of blood and cerebrospinal fluid. The necessity of adequate views of the skull following head injuries cannot be overemphasized to prevent the false sense of security obtained from negative but incomplete roentgen examinations.

Linear fractures of the skull must be differentiated from the normal markings of the cranium produced by sutures and meningeal arteries and venous channels. Linear fractures are usually blacker, have a sharper outline, and rarely divide. Stellate or crescentic fractures are seldom difficult to differentiate. Depressed fractures have a white line of double bone density at some place along the course of fracture, although a depressed flap fracture may have only a semilunar widening of the fracture line. Fracture lines demonstrated on both lateral views are sharper, blacker, and narrower on the affected side. Old skull fractures should be excluded when the patient has had a head injury within the previous two or three years.

The value of roentgen examination in determining the extent of injury to vital structures adjacent to a possible skull fracture depends upon the extent and location of a fracture, if present. The location of the fracture is important for it usually indicates the point of maximum injury to underlying tissues in the absence of clinical signs and symptoms of a middle meningeal artery hemorrhage or a subdural hematoma. The extent of the fracture also indicates the degree of violence causing the injury.

Summary

(1) The immediate treatment of head injuries rarely requires roentgen examination.

(2) The roentgen examination of patients having head injuries not requiring surgical procedures should be postponed until there is definite clinical improvement or until signs of brain injury have disappeared.

(3) Portable examinations by means of mobile roentgenographic units should be limited to patients having signs and symptoms warranting surgical intervention: (a) a middle meningeal artery hemorrhage, (b) a subdural hematoma, or (c) a depressed skull fracture. Roentgen evidence of a fracture confirms the clinical diagnosis. The absence of a demonstrable fracture does not preclude vascular or brain injury. A subsequent complete examination should be made in the roentgen department when

clinical signs of brain injury are negligible.

(4) Adequate roentgen examination of patients with head injuries requires transportation to the roentgen department and full cooperation of the patient. The minimum views essential to demonstrate or exclude skull fractures are: (a) posterior-anterior or frontal, (b) anterior-posterior or occipital, (c) right lateral or parietal, (d) left lateral or parietal, (e) submental-vertex or basilar, and (f) nose-chin position.

(5) The location of a skull fracture usually indicates the point of maximum injury to underlying structures. The extent of a skull fracture frequently indicates the degree of violence causing the head injury.

Comments

*By WALTER E. DANDY, M.D.
Adjunct Professor of Neurological
Surgery, Johns Hopkins University
School of Medicine.*

1. What head injury patients should be operated upon? Answer: (a) Those with depressed fractures; (b) Those with increased intracranial pressure, when coma deepens.

2. How may such patients be recognized by the general practitioner (to avoid movement of those patients not requiring neurosurgical consultation)? Answer: Patients should be transported to a neurosurgeon, or one called into consultation at home, when it is evident that the patient's state of unconsciousness is deepening.

THE SEMINAR

Readers are invited to submit problems to the Seminar and take part in the discussions, which should reach this office by the 10th of the month following the appearance of the problem. Send problems and discussions to THE SEMINAR, CLINICAL MEDICINE, Waukegan, Ill.

The New Seminar

THE SEMINAR has long been a popular feature of CLINICAL MEDICINE. Many readers have said that they enjoy the presentation of a case and the mental exercise in being a medical detective. Few of the readers could be prevailed upon to send in written discussions on such clinical problems, however.

To encourage you to send in problems and discussions, the rules of the game are being simplified. You must sign your problem or discussion with your full name and address, but we will print the material and attach only your initials. This procedure will encourage those readers who have said that they would like to send in a few notes, but "hated to stick their necks out."

Your case histories should be paragraphed so that one can tell at a glance the history, physical findings, laboratory findings and course. This will enable one to spot more quickly the elimination of a vital test or finding or symptom.

The problems submitted should be (1) those of fairly common occurrence, (2)

those diagnosable on the basis of history, physical examination and simple laboratory tests (urinalysis, blood count, Wassermann test, tuberculin skin test) and (3) those in which the case history is given adequately enough so that we can visualize the patient. Preferably, it should be possible to make the diagnosis in the physician's office or the patient's home, although hospital patients may be used.

Because our space is sharply restricted, it would be advisable to have each discussion of a problem begun with a list of conditions which must be considered in making the differential diagnosis. Many men feel that if they list more than three possible causes they are showing diagnostic weakness. The reverse is true. Unless a condition is thought of, it will never be diagnosed.

Problem No. 3, 1943 (Medical)

*Presented by M. P. N., M.D.
Columbia, Mo.*

A Negro man, 61 years of age, was first seen in the outpatient clinic on

September 6, 1940. The chief complaints were:-

1. "Misery" in the stomach
2. Swelling of ankles
3. Shortness of breath
4. A 15 pound weight loss

The "misery," edema, and dyspnea were noticed approximately one month prior to his first visit to the clinic. The "misery" was found to be a painful discomfort in the epigastrium, initiated by the ingestion of food, and lasted for approximately one hour after each meal. The ankle swelling had progressively increased. Dyspnea, amounting to orthopnea, was likewise progressive, with periods of greater severity that were referred to as "spells." Past history was essentially irrelevant; he had experienced no leg ulcers, no night sweats, no previous cardiac embarrassment, air hunger, or severe illness. There was no history of personal or family syphilis, malignancy or tuberculosis.

Examination. He was dyspneic and this was markedly evidenced following even minor physical exertion. There was a husky voice with a nonproductive cough made worse by lying down. Crepitant rales were heard in both lung bases. The ankles were edematous; the liver was palpable 3 cm below the costal margin at the right mammary line, and there was tenderness in the epigastrium. There was fluid in the abdominal flanks and a wave was transmitted from one side of the abdomen to the other by percussion. There was a strong radial pulse, a visible and palpable apex beat in the left 6th intercostal space 3 cm outside of the left midclavicular line, and at the apex there was a soft systolic murmur. The blood pressure was 128/100, and the pulse rate was 120 and rhythmic. There

was anorexia and insomnia.

He responded fairly well to bed rest, phenobarbital and digitalis therapy for 4 weeks. Then the manifestations previously recorded became exaggerated. The cardiac sounds were very muffled and distant, but the radial pulse was strong. The apex impulse was neither visible nor palpable. The cardiac size had increased greatly.

Under hospital care and strict bed confinement, three days later the findings were not materially altered except that the cervical veins were now conspicuous, air hunger was great, tachycardia persisted, the intercostal spaces of left and right sides now showed some bulging, and there was a respiratory rate of 37. A gastric analysis revealed retention of food, an acidity, a few Boas-Oppler bacilli, and pus cells. The blood Kahn was negative. Total white blood cell count was 4,700; with 43% lymphocytes, 3% large mononuclears, and 54% polymorphonuclear neutrophils. The total red cell count was 3,750,000 and hemoglobin (Dare) 60%. Urinalysis revealed a 24 hour output of 560 cc., a marked amount of albumen, hyaline, epithelial, and granular casts, a rare blood and pus cell, and numbers of triple phosphate crystals.

The temperature was consistently between 98 and 100° F. From the time first seen until death, a period of 40 days, the weight loss was 4 pounds.

He died on the 12th hospital day with dyspnea, orthopnea, edema, and mental confusion being very pronounced during the last 4 days.

Requirements: State your diagnosis of the cause of death, giving reasons.

What further examinations would you have made, if any?

The Infant's Water Needs

The infant's kidney is inefficient unless an ample amount of water is given. A baby requires much more fluid per pound of body weight than an adult. It is a well known clinical observation that premature infants are very liable to edema, and the low rate of kidney clearance shown by our studies is the reason. Any infant who is short of water is likely to have renal failure; one who is fed on cow's milk suffers sooner than a breast fed baby because his food contains more protein and salt.

An infant needs more water whenever the output by bowel, lungs or skin is increased (diarrhea, vomiting, sweating, fever), because his urine volumes must not be allowed to fall. Water should be

given, if the infant is feverish, but salt must be given as well if he is suffering from diarrhea or vomiting. The only electrolyte needed is salt, as the other minerals are supplied by the process of metabolism.

Daily weighing is important, as the change in weight is a more sensitive indication of the water balance than are chemical studies of the blood. Too much saline solution should not be given, as the salt must be excreted by the kidneys (edema follows). 5 percent dextrose solution in water may be given intravenously, if edema is present or the baby is gaining in weight after taking saline solution.—WINIFRED YOUNG, M.D. in Proc. Royal Soc. Med., Mar., 1943.



CLINICAL NOTES and ABSTRACTS

Microfilm copies of any of the published papers here abstracted, up to 25 pages, may be obtained for 25 cents from Microfilm Service, Army Medical Library, Washington, D.C.

Sciatica

By WALTER E. DANDY, M.D.

Johns Hopkins Hospital, Baltimore, Maryland

THE history alone is adequate for the diagnosis of a ruptured intervertebral disc. The patient complains of a low back pain, plus sciatica down the back of one or both legs. The pain is intensified, during acute attacks, by coughing and sneezing. There may or may not be diminished Achilles reflex (ankle jerk). This is best tested by having the patient kneel on a chair with the feet and ankles extended over the edge. (See Fig. 1.)

looked for if conservative treatment does not give relief to patients with persistent low back pain.—Ed.)

Nervous and Mental Sequelae of Tropical Diseases

Young Americans arriving in tropical countries find a totally different environment. Moral standards are lowered; human values are hardly worth mentioning, and intemperances of every kind are the order of the day. Sexual promiscuity is to be found everywhere and, as a result, psychic conflicts and guilty feelings are set up in the white man's conscience.

Alcoholism has its relationship to sexual problems and its bearing on vitamin deficiencies in the tropics. There are also the hazards of food intoxication, or food poisoning, which may be followed by neurologic symptoms. Persons with worms and flukes not infrequently show neurologic or psychiatric symptoms. The dysenteries and diseases caused by parasites may lead to neuropsychiatric sequelae; as may infections of the blood stream. Malaria has numerous neurologic sequelae.

In times past, it was accepted that a person who went to the tropics must have been "queer" to begin with, but now explanations must be found for the personality changes and neurologic sequelae.

Residence in the tropics, sooner or later, causes the lowering of blood pressure and basal metabolic rate in many persons. Then, there is heat fever; resulting from the powerful heating effect of the tropical sun, wherein the heat regulating mechanism becomes overtaxed and fails to keep the body below

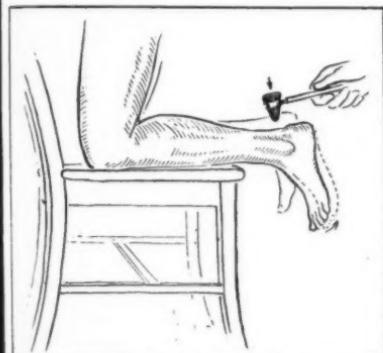


Fig. 1. Testing the Achilles reflex (ankle jerk).

The reflex hammer, side of hand or other object is tapped against the prominent Achilles tendon. The normal response is a quick jerk backward (toward the sole of the foot).

Dr. Dandy is one of the most distinguished neurological surgeons in the world today. Many authorities do not agree that it is as easy as this to make the diagnosis, although all agree that an intervertebral disc protrusion should be

the temperature at which damage is done to body cells (especially nerve cells). Epileptic-like convulsions may persist for years thereafter, as may senile mental changes and severe headaches. Brilliant light results in temporary or permanent blindness. Night blindness results from overstimulation by bright light, and such men cannot carry on night flying, night watch or night sentry duty, yet may have perfectly normal day vision.—J. L. McCARTNEY, M.D., in *Penn. Med. J.*, June 1943.

Prognostic Spinal Fluid in Uremia

It is possible to state within 2 minutes, after studying a specimen of cerebrospinal fluid, whether or not the patient will die of uremia. *Technic:* boil equal volumes of spinal fluid and Benedict's qualitative reagent for 2 minutes. The normal result is to get an opaque-green or yellowish green reduction, or a fine suspension of brown grains of copper oxide in a blue fluid. A clear, transparent green or yellow solution indicates a severe uremia, usually with a blood urea of over 200 mg. per 100 cc. and a fatal termination can be definitely stated.—G. C. LINDER, M.D., in *J. Cape Town Post-Grad. Med. A.*, Mar. 1943.

Local Treatment of Pruritus Ani*

Do not apply strong chemicals to the itching anus. They will aggravate the dermatitis. Use mild applications at first; discontinue the use of any medication which causes irritation.

To prevent scratching during sleep, the fingernails should be pared down and the patient should wear ordinary white cotton gloves, if there is evidence of scratching.

Tell the patient to use water rarely and to use no soap, if the pruritus is at all marked, as water is taken up by the cells and swelling results. Baths should be tepid; both hot and cold baths cause a reflex vasodilatation and increased itching.

Colloid baths are very soothing. One cupful of bran, oatmeal, corn-starch, or linseed is added to one quart of water and boiled for 15 minutes. Water is added continually, so that the volume of the mixture is maintained, and the boiling continued until the gruel is of moderately thick consistency. It is then set aside to cool. The cooled gruel is poured into a large muslin bag, tied securely, and the bag swished around in a tubful of tepid water until nothing but husks remain in the bag, which may then be used as a

washrag. The bathwater should become white. After bathing for 10 to 20 minutes, using a superfatted soap, and washing only the hands, face, and feet, drying should be accomplished by patting, not rubbing, with a towel.

Use soft toilet paper, or cotton and mineral oil, for cleaning around the anus after a bowel movement.

Soothing applications: The skin should be cooled and dry before any medication is applied. A bland dusting powder consists of boric acid and talcum, 6 parts of each, and zinc stearate to make 60 parts; to be dusted on every 6 hours.

If the skin is macerated or weeping, a modified calamine liniment (*not lotion*) should be used:

B		
Tragacanth pulv.	.....	1.00
Phenol	.....	0.16
Glycerine	.....	0.16
Calamine	.....	8.00
Zinc oxide	.....	8.00
Olive oil	.....	30.00
Bergamot oil	.....	0.50
Aqua calcis	.....	120.00

Sig.: Insert a wedge of cotton which has been soaked in the liniment between the buttocks to keep apart the moist skin surfaces and to dry the tissues mildly. If this is too drying, the following paste may be used at night:

B		
Menthol	.....	0.15
Phenol	.....	0.6
Acid boric	.....	3.0
Zinc oxide	.....	15.0
Petrolatum	.....	45.0
Oint. aqua rosae	.....	120.0

CHARLES J. DRUECK, M.D.

Chicago, Ill.

Papaverine in Cardiovascular Disease

Papaverine, one of the opium alkaloids, does not have narcotic properties, but it does cause relaxation of smooth muscle, especially of blood vessels. It has been used in pulmonary embolism (intravenously), in peripheral vascular occlusion, and in Raynaud's disease. As it increases coronary blood flow, it is of value in treating coronary occlusion and angina pectoris. The dose for angina pectoris is 1½ gr. (0.1 Gm.) four times daily. When so used, fewer attacks appear, less pain is experienced, and walking capacity is increased.

For premature beats of ventricular, nodal, or auricular origin, larger doses are necessary (as much as 3 grains—200 mg.—four times daily). Smaller doses should

*Med. Rec., Nov., 1942.

be used if possible, because the drug causes marked sleepiness. Papaverine is not habit forming.—A. J. QUICK, M.D., in *Wis. M. J.*, Dec., 1942.

♦

The Special Duty Nurse

Special duty nurses are no longer a commodity but belong in the category of scarce material and technically trained personnel. The medical profession must guide the public in the proper use of these people for the benefit of the community.

In normal times, the free use of special nurses lightens the floor duties for the hospital nurses, simplifies the physician's efforts, pleases the patient and the nurse.

Today, all physicians are being requested not to ask for such nurses unless some abnormality or complication arises. The obtaining of special nurses by the patient or family must be discouraged.

Printed form "A" is soon to be given

MASSACHUSETTS GENERAL HOSPITAL
THE EFFECT OF WAR ON HOSPITAL SERVICE
<p>Nurses have gone to war. The Armed Services will require a large percentage of all registered nurses. This means fewer for civilian hospital needs. Special nurses will always be needed but should not be asked for by either doctors or patients except for serious illness. The Boston hospitals have announced that they will not accept special nurses at this time, only upon order of the physician in charge. The hospital administration reserves the right to transfer nurses, with the physician's approval, when necessary to provide immediate care for very sick patients.</p> <p>The number of hospital floor nurses has also been greatly reduced by the war. Patients should remember this before making requests for special services. Each patient is asked to assist himself insofar as his condition permits. Visitors, flowers and telephone messages should be kept at a minimum so as to reduce the work of the nurses as much as possible.</p> <p>Hospitals are also having great difficulty in obtaining adequate numbers of other personnel; technicians, orderlies and helpers, male and female. This situation is now as acute as ever in every department. It will be helpful if patients remember this and accept delays and deficiencies in service that in normal times would not be tolerated. This is one of the disciplines of wartime.</p> <p>With a depleted medical staff, fewer nurses, and a reduced number of employees in all departments, the Massachusetts General Hospital is trying to maintain its accustomed service to the community.</p> <p>The cooperation of all patients is requested.</p>

(Form "A")

to each patient in every hospital in Boston (the wording will vary slightly from hospital to hospital, of course). Each staff member will receive information relative to the ordering of special duty nurses and their release, both of which must be performed by the physician.

Many physicians do not know that there is no reason why 12 hour service cannot be given, and that only two nurses need be occupied during the 24 hour care of one patient. Those nurses who do 12 hour duty receive \$7.50 per

day, which is in the same proportion as \$5.00 for eight hours (plus board), so that the cost to the patient is the same for 24 hours of nursing care.

Many nurses are anxious to work 12 hours because of the increased cost of living and because it permits a greater amount of savings and free days. If the nursing care is not too strenuous, and the patient-nursing relationship satisfactory from a personality angle, the patients almost always prefer 2 personalities rather than 3. — JOHN E. GORRELL, M.D., Boston, Mass.

♦

Management of Coronary Disease

In the acute pain of coronary closure, $\frac{1}{4}$ or $\frac{1}{2}$ gr. (16 or 32 mg.) of morphine should be given, subcutaneously or intravenously, followed by one ounce of whiskey, which relieves the spasm of the small vessels. Continuous oxygen administration should be given if pain persists, together with tincture of opium.

Later, the patient should lose weight, endeavor to have the bowels move regularly, avoid gas-forming foods, reduce or discontinue tobacco in any form, chew his food properly, and avoid overeating. Rest after meals will prevent the appearance of discomfort.—FRED WILLIUS, M.D., in *Med. World (Lond.)*, Nov., 1942.

♦

Indications for Nasal Surgery

Before accepting nasal surgery as inevitable, one should be sure that an adequate diagnosis has been made. In an allergic patient, who may be detected by a personal or family history of hay fever, asthma, eczema, or urticaria, or by pale, grey, swollen turbinates, the offending cause should be removed first. Such organic diseases as diabetes, tuberculosis, syphilis, anemia, and others must be ruled out. Unless the condition is urgent, non-surgical treatment (vaccines, ephedrine-saline nose drops, constitutional therapy or Proetz sinus treatments) may be tried. Hasty surgical intervention should never be permitted; nor should nasal or sinus surgery be advised in the hope that it will be of benefit.

When such surgery is carried out, it must be thorough, as the symptoms after incomplete nasal operations are often more severe than before. Incomplete operations make for multiple operations, which accounts for the old saying, "One sinus operation means another."

After surgery, a proper follow-up is highly important. It is only by these means that the present low percent-

age of cures (70 percent in nasal surgery; 40 percent in sinus surgery) may be improved. At the same time, if surgery is definitely indicated, the patient should be told so at once, so that proper treatment can be given.—A. R. HOLLENDER, M.D., in *E.E.N.T.M.*, Jan., 1943.

Roentgen Treatment of Chronic Asthma

Roentgen therapy of the chest will often help chronic asthmatics, especially if infection in the sinuses and bronchial tubes is present (in which case, thick green or yellow sputum is found). Response usually occurs within 2 weeks after the beginning of the treatment. Technic: "Crossfire" irradiation of large areas of the lungs through six fields; two fields are treated at once with a dose for the two fields of 200 r, and a total dose of 800 to 1,600 r.—RAY M. BALYEAT, M.D., in *Am. J. Roent.*, Feb. 1943.

Birth Control

What is the doctor's responsibility in the birth control issue? It is a responsibility which has hitherto been accorded little place in medical practice and one which many doctors are still hesitant to assume. It is the responsibility of being the judicious, far-seeing, but friendly counselor of his younger married patients in family planning. In most instances this will entail laying stress, either by innuendo or direct statement, on the desirability of having children, but in a few cases it will call for family limitation. It is thus a two-fold responsibility based on the belief that the trouble with birth control is likewise two-fold: there is too little of it and too much.

Too little, for those women who require it for health reasons; too much, in the case of healthy women who can well afford to have children.—N. J. EASTMAN, M.D., in *The Doctor and Birth Control*.

The Navy Doctor in War

Burns

Burns are a major item among casualties. Flash burns can be prevented by keeping the body covered with a flimsy sort of clothing. The treatment of burns consists of First Aid Treatment and Definitive Treatment. The objects of the First Aid are: (1) to prevent the open wound from further contamination, (2) to relieve pain, (3) to prevent shock, (4) to decrease fluid loss. We also give sul-

fadiazine, 4 grams by mouth, in all cases. Next, we administer blood plasma intravenously, and $\frac{1}{2}$ grain of morphine is given at once.

We do not use tanning in any form and a first aid measure. Pain is relieved promptly by vaseline or ointment. In a second degree burns, $\frac{1}{2}$ cc. of tetanus toxoid is given. In cases of burns of the eye, 2% butyn ophthalmic ointment is used.

In the definitive treatment, the removal of all dead and devitalized tissue is carried out. Tanning is used only if extensive burns of the trunk, which are seen within twelve hours after burn. Rapid tanning by tannic acid spray and silver nitrate is advisable.

Wounds

Some doubt has been cast on the local use of sulfonamides. Investigation shows that in contaminated wounds, the dusting of sulfa drugs does harm; in clean wounds sulfa prevents infection. There is no question of the efficacy of sulfa taken internally as they reduce the incidence of infection.

Malaria

It must be remembered that there is no prophylaxis against malaria. Evodiaquine and atabrine only suppress and when their use is stopped, disease develops. Without these suppressive measures, a military operation in a heavy infected area, such as the Solomon Islands, would be a failure. All of us must brush up on malaria and be on the lookout for its appearance in our communities.—REAR ADMIRAL LUTHER SHELDON, JR., in *Va. Med. M.*, June, 1943.

Para-Aminobenzoic Acid

Para-aminobenzoic acid, part of B-complex vitamins, because of articles which have appeared in the medical press concerning its value in the treatment of gray hair, has become the object of curiosity on the part of many physicians.

"Preliminary Report on Para-Aminobenzoic Acid for Graying Hair," written by Lydia DeVilbiss, M.D. of Miami, Florida, was published in the *Medical Woman's Journal* for November, 1942. In answer to our letter of inquiry, she writes, "I am continuing the work and keeping careful records and photographs. So far, with the exception of one who has taken it only several months, all those who take the tablets consistently, report noticeable darkening of the hair. . . . There are no further reports of deleterious or unhappy effects; many report that they feel an increased sense

cases well being while taking the product . Dr. Upjohn of the Upjohn company now providing it . In the fall, I should have enough data to write a second report, to be published in CLINICAL MEDICINE."

In a Dr. Barnett Sure, Head, Department of Agricultural Chemistry, University of Arkansas, Fayetteville, writes, "We have no clinical evidence to warrant making any conclusions concerning the role of the *α*-aminobenzoic acid in the human being." . . . A very interesting article, "Sunburn and P-Aminobenzoic acid," by Stephen Rothman, appeared in the *Journal of Investigative Dermatology*, December 1942.

The dosage recommended in the treatment of gray hair by Dr. DeVilbiss is our 100 mg. tablets each day for 6 months.

Digestive Test Capsule for Indigestion

By means of a digestive test capsule one may learn how digestion is being carried on. The capsule, (see Fig. 1.) contains beads attached to various digestible substances* (fish, potato, meat, catgut, thymus); it is taken shortly after a meal.

The capsule test may be used in all cases in which a more thorough knowl-

ined to find the glass beads. They are washed in cold water, spread out and examined to see which substances remain.

Under normal conditions, all the substances will have disappeared except the potato peel.

Disturbances of Intestinal Digestion

Test	Significance
1. All substances attached to beads are undigested	1. Indicates that carbohydrate, protein and fat foods are not digested; test gastric juices for achlorhydria.
2. Starchy food is not digested	2. The patient suffers from flatulence; he should eat much meat, butter and fat; 5 gr. of taka-diastase is given three times daily.
3. Meat is not digested	3. Nausea, bad taste, odorous flatus are present; meat should be taken in small amounts, in finely divided form.
4. Fat is not digested	4. May be symptomless; stools are often of light color; attacks of abdominal pain may occur.

Treatment

In the mixed groups, the clinical picture is hard to define because the various symptoms are less marked. When the test shows that no foods are digested well, anorexia, general debility, abdominal pain and diarrhea are often found. Semifluid diets are given to these patients (milk, soft boiled eggs, soups, fine gruels, crackers or zwieback, tea, cocoa, malt, beer; later increased with fish, mashed potatoes, rice; finally, white bread, scrambled eggs and a small quantity of tender meat). The capsule test shows a better result after treatment.

In the cases of partial intestinal dyspepsia, the food that is not well digested is given in small amounts and in finely subdivided form. Where protein and fat digestion are impaired, the pancreas preparations are of benefit.

General measures: In our concern with drug and dietetic measures, we must not forget the general health of the patient. Baths, infra-red and ultraviolet therapy, relaxation, vacations, freedom from care—all these bring back health.—MAX EINHORN, M.D. in *Med. Rec.*, Feb., 1943.

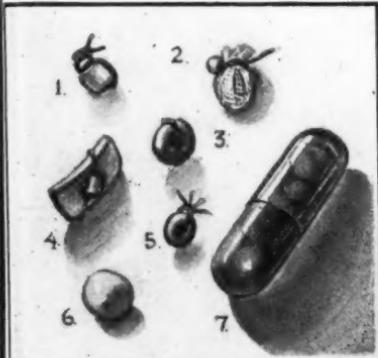


Fig. 1.—1, catgut bead; 2, thymus bead; 3, fish bone bead; 4, potato bead; 5, meat bead; 6, mutton fat bead; 7, digestive test capsule.

edge of the functions of the digestive tract is desired. Its use does not inconvenience the patient at all; he takes his ordinary foods and the stool is examined.

* These food substances may be prepared at home or may be obtained, ready to give, at Elmer & Amend, 49 E. 34th St., New York City. The capsule must be used within a few days after its delivery.



THUMBNAIL THERAPEUTICS

Local Anesthetic for the Eye

- For minor surgery upon the conjunctiva, such as removal of a pterygium, or removal of foreign bodies, the following solution will provide anesthesia and vasoconstriction:

Cocaine hydrochloride	1.20
Adrenalin chloride 1:1000	0.60
Aqua dest	30.00

—E.E.N.T.M., Sept., 1942.

[A 2-percent solution of Butyn in plain sterile distilled water (use no chlorides), with or without epinephrine, is an especially valuable anesthetic for eye operations.—Ed.]

Bleeding

- In cases of cardiac dilatation, from whatever cause, in mitral or aortic lesions or distention of the right ventricle in emphysema, when signs of venous engorgement are marked and when there is orthopnoea with cyanosis, the abstraction of from 20 to 30 ounces of blood is indicated. This is the occasion in which timely venesection may save the patient's life. It is particularly helpful in the dilated heart of arteriosclerosis.—**SIR WILLIAM OSLER.**

Abdominal Distention

- The inhalation of 100 percent oxygen through a snugly fitting mask (as the B. L. B. mask) is an effective method of treating abdominal distention. The mask must be used continuously. An oxygen tent, nasal catheter, or leaky mask will not accomplish the result. The patient must be warned not to swallow air.—W. M. BOOTHBY, M.D., in *Arch. Phys. Ther.*, Oct., 1942.

Anemia in Nephritis

- The best method of treating the anemia of nephritic patients is by giving a balanced diet of fruits, vegetables, and meats, together with iron.—A. FISHER, M.D., in *Med. World (Lond.)*, Nov., 1942.

Cystitis in Women

- Cystitis and cystitis-like distress in women respond much more promptly to dilating the urethra with sounds than to vesical irrigations. Dilating sounds, of larger and larger size, should be introduced once a week until a caliber of 30 or 32 French is reached. Meatotomy may be required before large sounds can be used. Sulfathiazole or sulfadiazine should be given, in 10-grain (0.65 Gm.) doses, three times daily, if pus is found in the urine. If relief is not obtained in a few weeks, it may be assumed that the cause of the pus is a lesion in the bladder or kidneys, and a cystoscopic investigation should be made.—E. G. BALLINGER, M.D., in *Urol. & Cut. Rev.*, Sept., 1942.

Acute Glaucoma

- Acute, congestive glaucoma may be cured by the administration of sulfanamide in 15 gr. (1.0 Gm.) doses three times daily. When successful, results are apparent in 24 hours.—F. V. GAMMAGE, M.D., in *E.E.N.T.M.*, Nov., 1942.

Renal Decapsulation for Sulfonamide Oliguria

- A patient with sulfathiazole oliguria was cured by the removal of the capsules from both kidneys. The kidneys were swollen inside their capsules; they expanded noticeably when the capsules were incised.—M. L. WEINSTEIN, M.D., in *Am. J. Surg.*, Apr., 1943.

Cold for Burns

- Burns may be treated by thoroughly and gently cleaning, sprinkling with sulfadiazine powder, covering with vaseline gauze (one or two thicknesses), and surrounding with icebags or electric refrigerating equipment.* Pain is relieved as soon as the tissues become cool, and swelling stops. Cooling is continued until healing is well under way.—L. W. CROSSMAN, M.D. in *N.Y.S.J.M.*, May 15, 1943.

*Supplied by Therm-O-Rite Products Co., Buffalo.



DIAGNOSTIC POINTERS

Diagnostic Significance of Indicanuria

Indicanuria proves the presence of putrefaction (usually intestinal) of proteins. Indol is not an indifferent compound. There is experimental and clinical evidence of its toxicity. For example, a man complained of burning pain in the palms of his hands and soles of the feet, and there was an intense redness in the palms and fingertips. All signs and symptoms disappeared after 3 days on a protein-free diet.—L. LICHTWITZ, M.D., in Rev. Gastroent., Oct., 1942.

[A simple test for indican: To 5 cc. of urine in a test tube, add 5 cc. of Obermayer's reagent; mix, and add 15 drops of chloroform; shake and allow the chloroform to settle. A blue color in the chloroform indicates the presence of indican. A pink color is caused by ingestion of iodides. Obermayer's reagent consists of 3 Gm. of ferric chloride and 1,000 cc. of fuming hydrochloric acid.—Ed.]

Blood Pressure

• A rising blood pressure, in the absence of edema, should suggest an acute exacerbation of a chronic nephritis.—H. McLEAN, M.D., in Med. World (Lond.), Nov., 1942.

Glaucoma

• An infant with glaucoma should be suspected of having syphilis. A patient with acquired glaucoma, for which no other cause can be found, should be examined for syphilis.—E.E.N.T.M., Nov., 1942.

Glycosuria and Urine Retention

• Strongly positive reactions for sugar may be found in patients with residual urine (incomplete emptying of the bladder). Any patient with glycosuria should be catheterized after he has urinated as much as possible. If this factor is forgotten, the patient may be given overdoses of insulin.—H. F. Root, M.D., in N.Y.S.J.M., Dec. 15, 1942.

Activity for Paralysis Agitans (Parkinsonism)

• The Parkinsonian patient is much improved by activity. It has long been noted clinically that the patient with *paralysis agitans* who retains his regular work is much better than the patient who sits down, or lies down, much of the time. Hyoscine, stramonium, atropine, or belladonna administration yields persistently good results, only if the patient becomes active; otherwise, increasing doses of the drugs become necessary until they are finally ineffective, the patient becomes rigid and the tremor more marked. Routine exercises should be prescribed.—A. M. RABINER, M.D., in N.Y.S.J.M., June 1, 1943.

Pus in the Neck

• In hunting for pus deep in the neck, find the carotid sheath and follow it. It is the natural highway for pus and for the surgeon in pursuit of pus.—J.A. M.A., Nov. 21, 1942.

Urinalysis

• The physician who does not examine the urine of every patient who consults him will sooner or later treat as indigestion a case of uremia.—LANGDON BROWN, M.D., in Med. World (Lond.), Nov., 1942.

Food Allergy

• The cutaneous manifestations of food allergy show a wide variation in severity. They principally consist of urticaria ("hives"), angioneurotic oedema (giant urticaria), eczema (atopic dermatitis), petechial rashes (purpura), acne vulgaris, and not infrequently various degrees of itching.—Med. World, Nov. 20, 1943.

The Early Diagnosis of Rickets

• An increase in the amount of phosphatase in the blood serum or plasma may be the first definite sign of rickets.—C. L. REED, M.D. in "Vitamin D" (University of Chicago Press).

Albuminuria

• One-half of the cases of albuminuria found in pregnant women are due to urinary infection with colon bacilli.—G. F. GIBBARD, M.D., in Med. World (Lond.), Nov., 1942.

NEW BOOKS

Any book reviewed in these columns will be procured for our readers if the order, addressed to CLINICAL MEDICINE, Waukegan, Ill., is accompanied by a check for the published price of the book.

What a sense of security in an old book which Time has criticized for us!—LOWELL

THE AMERICAN ILLUSTRATED MEDICAL DICTIONARY Dorland

THE AMERICAN ILLUSTRATED MEDICAL DICTIONARY: A Complete Dictionary of the Terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Nursing, Veterinary Science, Biology, Medical Biography, etc. By W. A. Newman Dorland, A.M., M.D., F.A.C.S. Lieut.-Colonel, M.R.C., U.S. Army; Member, Committee on Nomenclature, American Medical Association. With the collaboration of E. C. L. Miller, M.D., Medical College of Virginia. Nineteenth Edition, Revised and Enlarged. 1,647 pages. 914 illustrations, including 269 portraits. Philadelphia and London: W. B. Saunders Company. 1943. Price, plain, \$7.00; thumb-indexed, \$7.50.

Dorland's dictionary has been a classic for so many years that it is difficult to review. With it at hand, one can rapidly determine the meaning of any word used in medicine or the related sciences (biology, chemistry, pharmacy, veterinary science). Also, one can obtain a thumbnail biography of famous medical men or refer to an illustration of a part of the body. The colored illustrations of the venous system are especially good.

The definitions are clear and concise. When a word may be spelled in several different ways, all are listed. More than 2,000 new words have been added to this edition.

FUNDAMENTALS OF IMMUNOLOGY Boyd

FUNDAMENTALS OF IMMUNOLOGY. By William C. Boyd, Ph.D., Associate Professor of Biochemistry, Boston University School of Medicine; Associate Member, Evans Memorial, Massachusetts Memorial Hospitals, Boston, Mass. 45 illustrations. New York: Interscience Publishers. 1943. Price, \$5.50.

The author has, within comparatively brief limits, presented the modern concepts of immunology. No historical information is given, thus reducing the amount of material and its complexity.

Although primarily produced for the student in medicine and ancillary sciences, the subject is so clearly and interestingly handled that many physicians who wish to have a knowledge of present day immunology may read it in their spare time with much profit and not too much labor.

References are given to all modern work. The author's style is refreshing—clear, brief, and touched with humor.

THE KENNY CONCEPT OF INFANTILE PARALYSIS AND ITS TREATMENT

Pohl

By John F. Pohl, M.D., Clinical Assistant Professor of Orthopedic Surgery, University of Minnesota; Attending Orthopedic Surgeon, Minneapolis General Hospital. In collaboration with Sister Elizabeth Kenny, Honorary Director of the Elizabeth Kenny Clinics of Australia; Honorary Director of the Elizabeth Kenny Institute, Minneapolis; Guest Instructor, University of Minnesota Medical School. With a foreword by Frank R. Ober, M.D. President, The American Orthopedic Association. Copyright 1943. Bruce Publishing Company, Minneapolis and Saint Paul: Price \$5.00.

This book presents, in clearly written steps, the various maneuvers that make up the Kenny treatment of infantile paralysis. The various muscles are illustrated and the steps of teaching proper recovery of function are described in the text.

The book is divided into three main sections, concerning itself with the acute, the convalescent and the chronic stages of poliomyelitis.

This book cannot have too wide a sale.

CHEMOTHERAPY OF GONOCOCCIC INFECTIONS Herold

CHEMOTHERAPY OF GONOCOCCIC INFECTIONS: By Russell D. Herold, B.S., M.D. Associate Professor of Surgery (Urology) College of Medicine, University of Illinois, Chicago, Illinois. St. Louis, Mo.: The C. V. Mosby Company, 1943. Price \$3.00.

The chapter on differential diagnosis of gonorrhea in the male, alone, is worth the price of this slim volume. The author presents the different possibilities and suggests how they may be diagnosed.

Practical points are given on prevention of venereal diseases, on use of the various sulfonamides, and the limited use of urethral injections, preferably with acriflavine.

Every urologist and general practitioner should have this manual. The gynecologist and the pediatrician will be interested in the sections on gonorrhea in women and children, respectively.

The author presents a well rounded concept of diagnosis and treatment.

RELIGION AND HEALTH Hiltner

RELIGION AND HEALTH. By Seward Hiltner, Executive Secretary, Commission on Religion and Health, Federal Council of the Churches of Christ in America, Inc. New York: The Macmillan Company. 1943. Price, \$2.50.

Clinical training for the clergy seems quite a change from the old traditional method of associating pastors with prayer and physicians with pills.

Thinking physicians have long wished that they had help in the management of thousands of patients who need mental guidance as well as physical guidance. This book is an endeavor to bring both professions closer together in their mutual efforts.

For the clergyman who can see beyond "converting the sinner" and moralizing, and the physician who can see beyond symptomatic treatment, this text is interesting.